Buletin Ukur, Jld. 5, No. 3, m.s. 233-235, Oktober, 1994

Report: Special Training on Hydrographic Surveying in Canada 4 June -16 September, 1994

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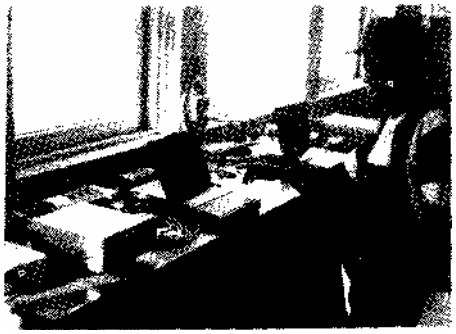
Introduction

This training was part of Canada Hydrographic Association (CHA) assistance in providing an advanced hydrographic training programme for UTM lecturers at established Canadian University and hydrographic agencies. The financial support for this project was provided by Canadian International Development Agency (CIDA). Two lecturers from the Centre for Hydrographic Studies were chosen for this training namely, Usmuni Din and myself. Overall, we were trained at the University of New Brunswick plus six hydrographic agencies by experienced and skill supervisors. This report will look briefly into the training experienced at all six places and the work they are associated with. The training started in Fredericton at the University of New Brunswick for eight weeks followed by two weeks at Universal System Limited to receive training on the CARIS systems. Next, we went to Vancouver to receive a one day training on the ECDIS systems followed by two weeks field programme on the British Columbia coast with the Canadian Hydrographic Service. Finally, the remaining time were spent at Quester Tangent Corporation to receive training on the ISAH systems, with a short summary and review period at the Institute of Ocean Sciences in Sidney, British Columbia.

University of New Brunswick (UNB)



This university is located in Fredericton, New Brunswick. Previously the department we were associated with was known as the Department of Surveying Fj-igineering. However, since 1 January, 1994 it is given a new name as the Department of Geodesy and Geomatics Engineering. Our intensive eight weeks training of academic studies and some field activities were supervised by Professor David Wells assisted by Dave Dodd. Professor David Wells is a world renowned leader in hydrographic research with many contributions to the discipline, including real-time differential GPS for hydrographic projects and multibeam (swath and sweep) sonar applications and the processing of high density sets. He has written many articles in established journals and is currently a member in the FIG/IHO Advisory Board on Standards of Competence for Hydrographic Surveyors. Information and experience which has accumulated during the build-up of the hydrographic surveying program at UNB were shared with us. There are four aspects to this information and experience: program design, program content, resource materials and teaching methods. During the eight weeks twenty-three hydrographies topics were covered by us. Normally, thees were taught to UNB students in two semesters. A total of 25 assignments were compeleted. Apart from that we carried out two field activities, one involving

joint projects by UNB, Canada Coast Guard, Canadian Hydrographic Service and United States Army Corps of Engineers (USACE) and the other involving a joint projects by UNB, Port of Saint John Corporation and Nortech Survey. We were exposed to the latest tecnique in hydrographic surveying application such as real-time On-The Fly (OTF) DGPS, real time code DGPS and the used of Low Power Tide Gauge which can be accessed at any time by phone line.

Universal Systems Limited (USL)

The next 2 weeks in Fredericton was spent at a company established for developing CARIS GIS software. CARIS stands for Computer Aided Resource Information Systems. Among the package that we look into were CARED and CARMAN (cartographic mapping), SAMI (Semi-Automated Map Input) and HIPS (Hydrographic Information and Processing System). In South East Asia region, this software is being used by Royal Malaysian Navy, Marine Department of Sarawak, Port of Singapore Authority and the latest user is the Indonesian Navy.

Offshore Systems Limited (OSL)

OSL is located in North Vancouver, British Columbia, Canada. The company pioneerd the development of commercial Electronic Chart Display and Information System (ECDIS). Their own developed system was named ECPINS (Electronic Chart Precise Integrated Navigation System). Combining hydrographic data with input data from the ship's gyrocompass, radio and satellite positioning-fixing systems, electronics charts can show the position, course, and track of one's vessel relative to the nearby coastline, navigation hazards, and intended track in real-time on a full colour graphics display. We were given hands-on training in operating ECPINS with OSL owned vessel known as OFFSHORE SURVEYOR, a 58 foot vessel. It is anticipated that ECDIS will be the legal equivalent of the paper nautical chart in the future once endorsed by IMO (International Maritime Organization).

Canadian Hydrographic Service (CHS)

Our next stop was in Bella Bella, approximately 400 km north of Vancouver to join Canadian Survey Ship 'PENDER'. The Canadian Hydrographic Service is responsible for surveying and charting Canada's coastal and inland waters to provide information for the safe, orderly and efficient conduct of vessels. Here we were trained under George Eaton, the Hydrographer-In-Charge (HIC) of the project. Among the field work we carried out included using aerial photographs by angle measurement (thedolite T2) and EDM (Microfix), sounding work by analogue/digital echo sounder using real-time code DGPS, tides measurement using analogue and digital tide gauge. In case of digital echo sounder, the access to the water level information was by radio link. The processing onboard the survey launch was by ISAH HYDAS. Among the post-processing software used some were developed inhouse by CHS. These are SENSUR, DEPPRO. However these softwares are similar to those available at Quester Tangent Corporation (QTC). The similarity is bacause the software are originally from CHS before given the right to QTC.

Quester Tangent Corporation (QTC)

This company is known for developing ISAH (Integrated System for Automated Hydrography). Presently Marine Dept. of Sarawak and Port of Singapore Authority are using this system to carry out hydrographic surveying in their territories. We spent two weeks here training on HYDAS

(Hydrographic Data Acquisition System) and CARISAH which comprising of two modules HYPS (Hydrographic Processing System) and HFS (Hydrographic Fair Sheet).

Institute of Ocean Sciences (IOC)

Where is a better place to end our training other than IOC. The Institute of Ocean Sciences in Sidney, British Columbia is one of a network of nine major scientific facilities across Canada operated by the Science Sector of the federal Department of Fisheries and Oceans (DFO). The Institute is home to Canadian Hydrographic Service for the Pacific Region. This is where all the systems developed by USL and QTC came from. They were initially developed inhouse by CHS before given the right to USL and QTC. Among the publications produce by CHS are the nautical charts; chart corrections; sailing directions; small craft guides; tides, currents and water level information; and special charts. Among the Canadian Survey Ship we visited is the R.B. YOUNG. We were also given a closer look at Remotely Operated Vehicles (ROV).

Conclusion

The training has been very useful especially the experience gained from the training supervised under different institution and agencies. The training environment were different evolving in hydrographic surveying application. The topics covered at UNB helps to relate to the training carried out at other places. The field training exposed us to the latest technology and information in hydrographic surveying. The opportunity to discuss the courses and field activities at all the places also strengthen our knowledge. It has been a very enjoyable and knowledgeable period for us during our stay in Canada especially to be able to make friends and contacts among the hydrographic community known to be excellent in their fields.

Acknowledgement

This training would not be possible without the cooperation from the Canadian Hydrographic Association, especially Tom McCulloch and Dave Pugh. We would also like to express our appreciation to Universiti Teknologi Malaysia and our former Dean of Faculty of Surveying and Real Estate, Prof. Madya Hj. Abdul Razak Abu Bakar for granted our training leaves.